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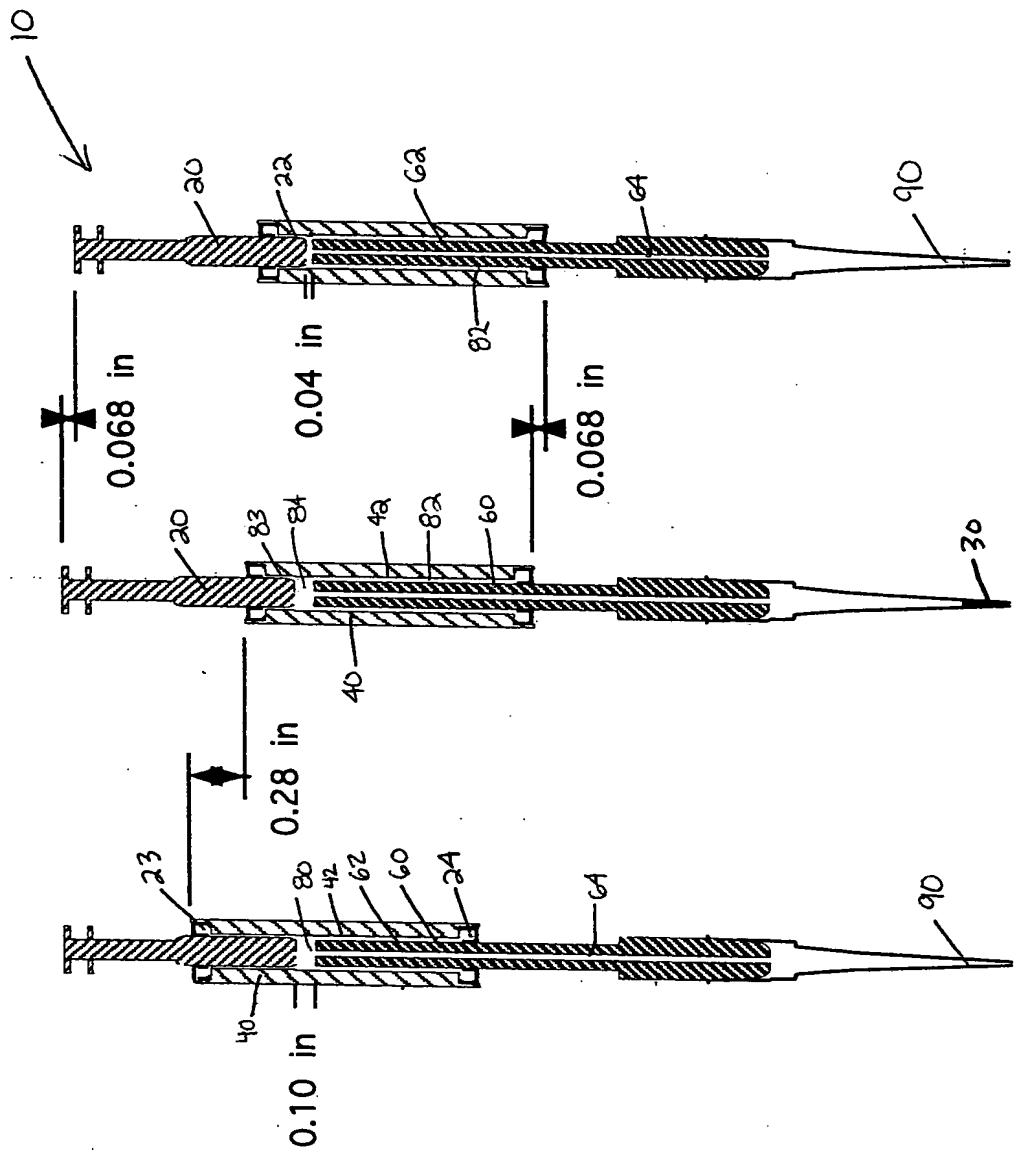


Fig. 1A

Fig. 1B

Fig. 1C

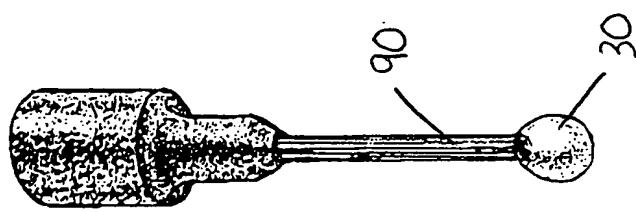
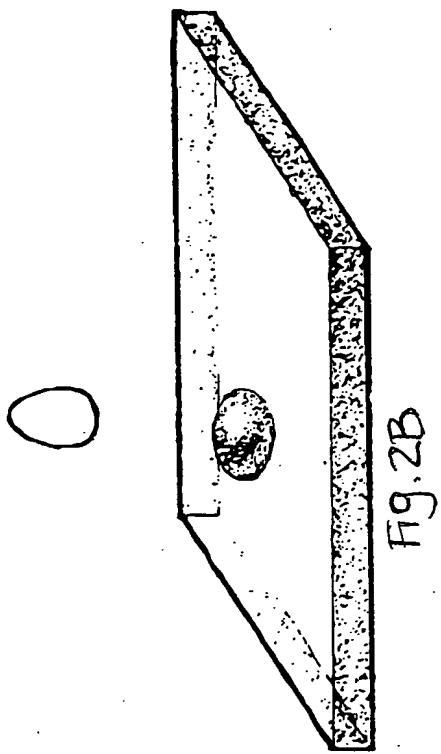
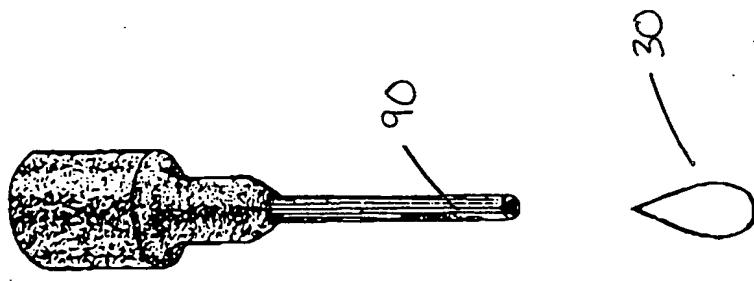


Fig. 2A

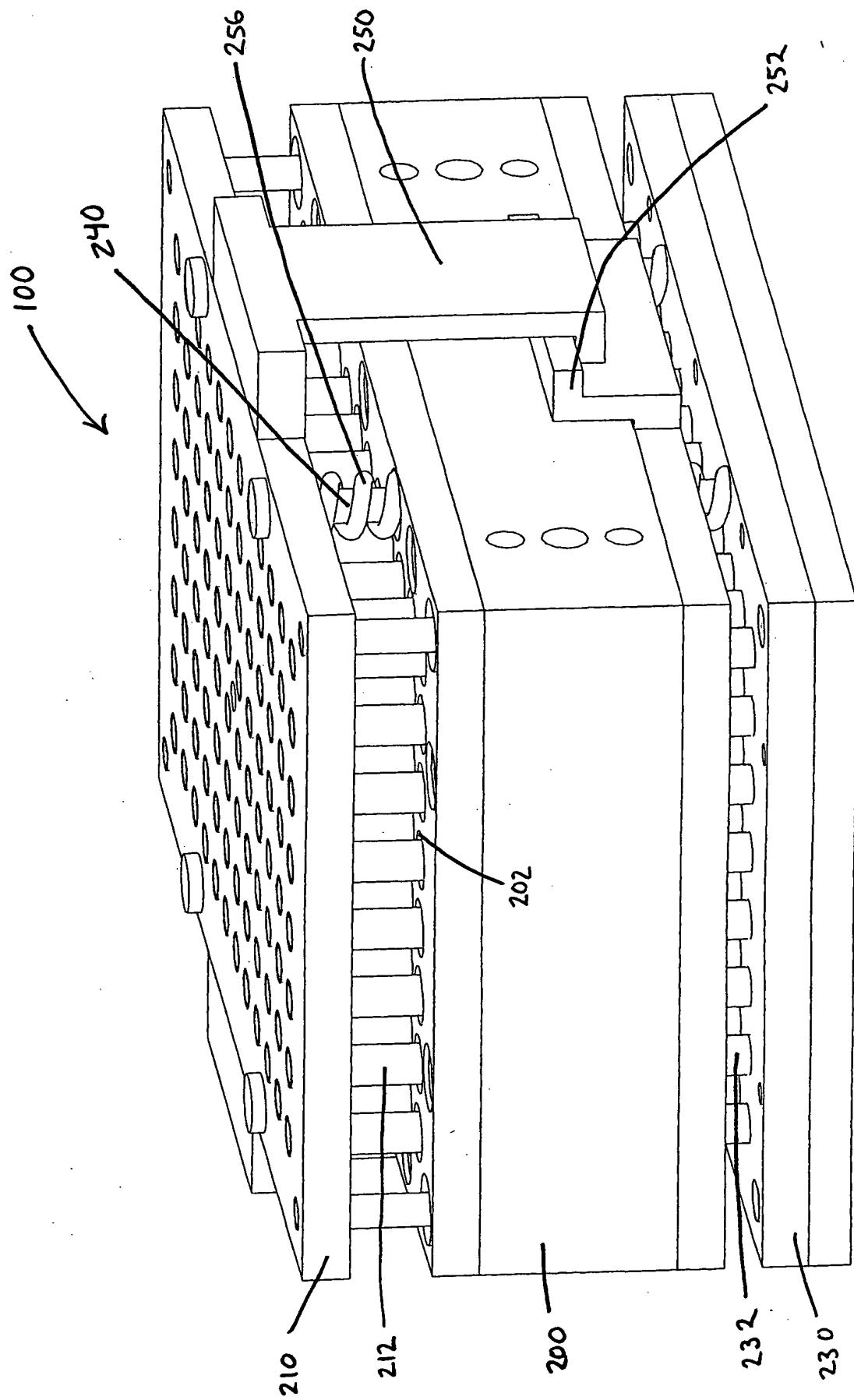


Fig. 3

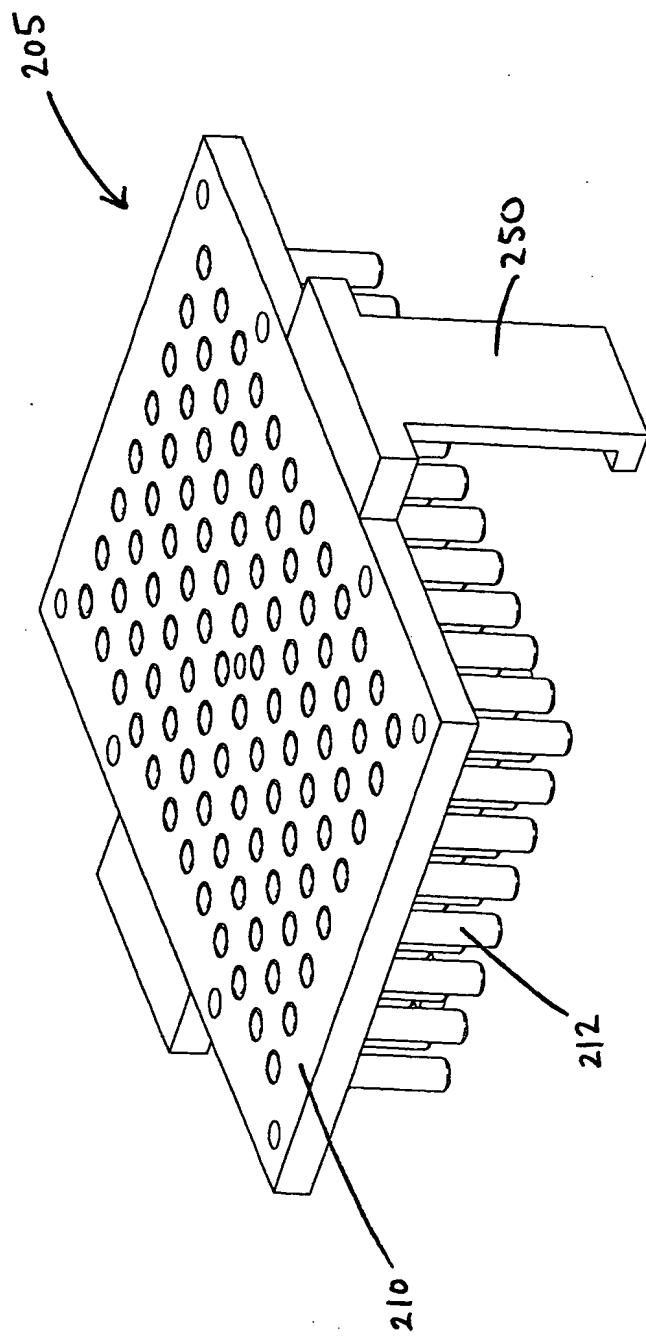


Fig. 3A

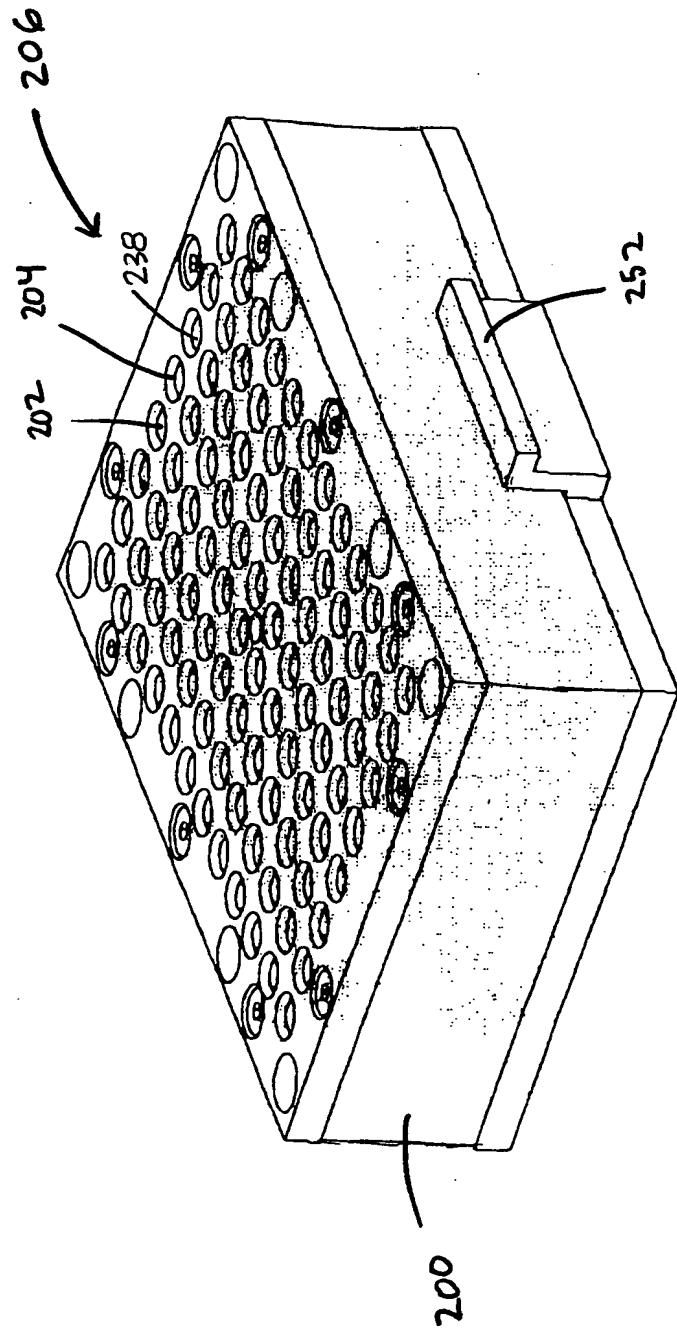


Fig. 3B

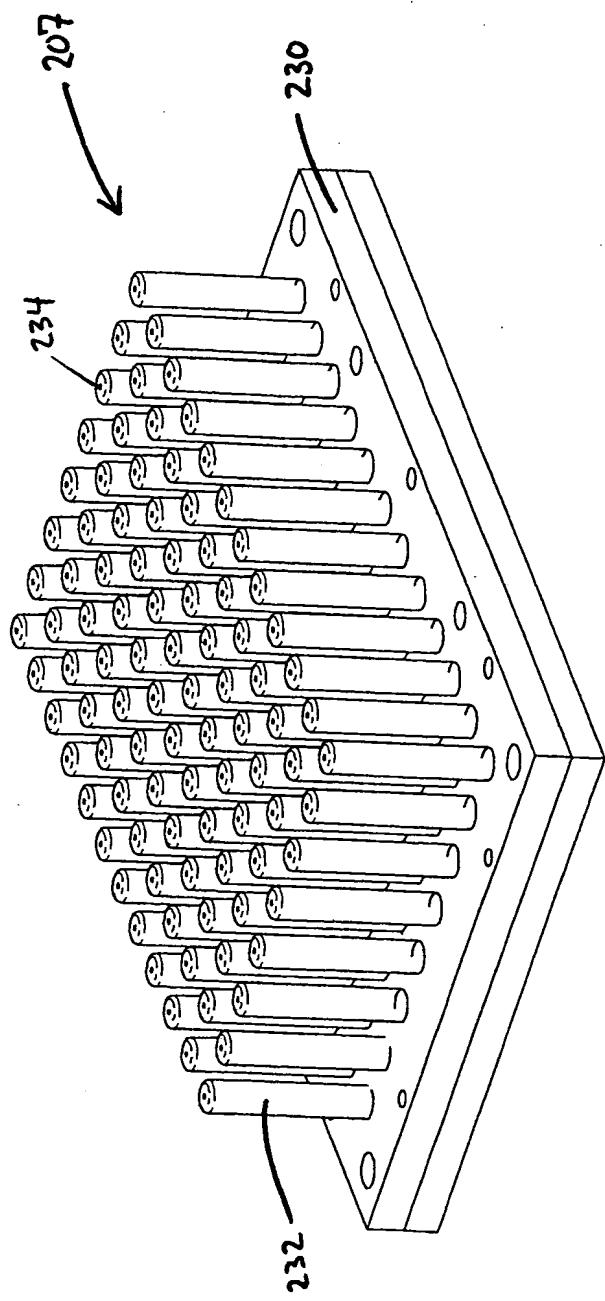


Fig. 3C

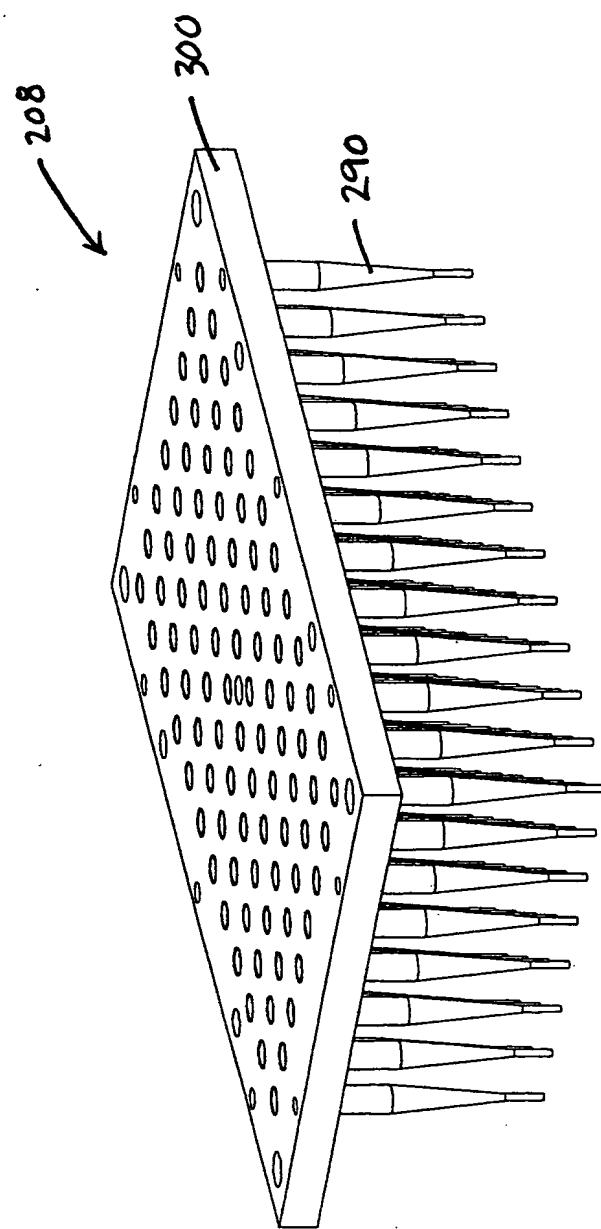


Fig. 3D

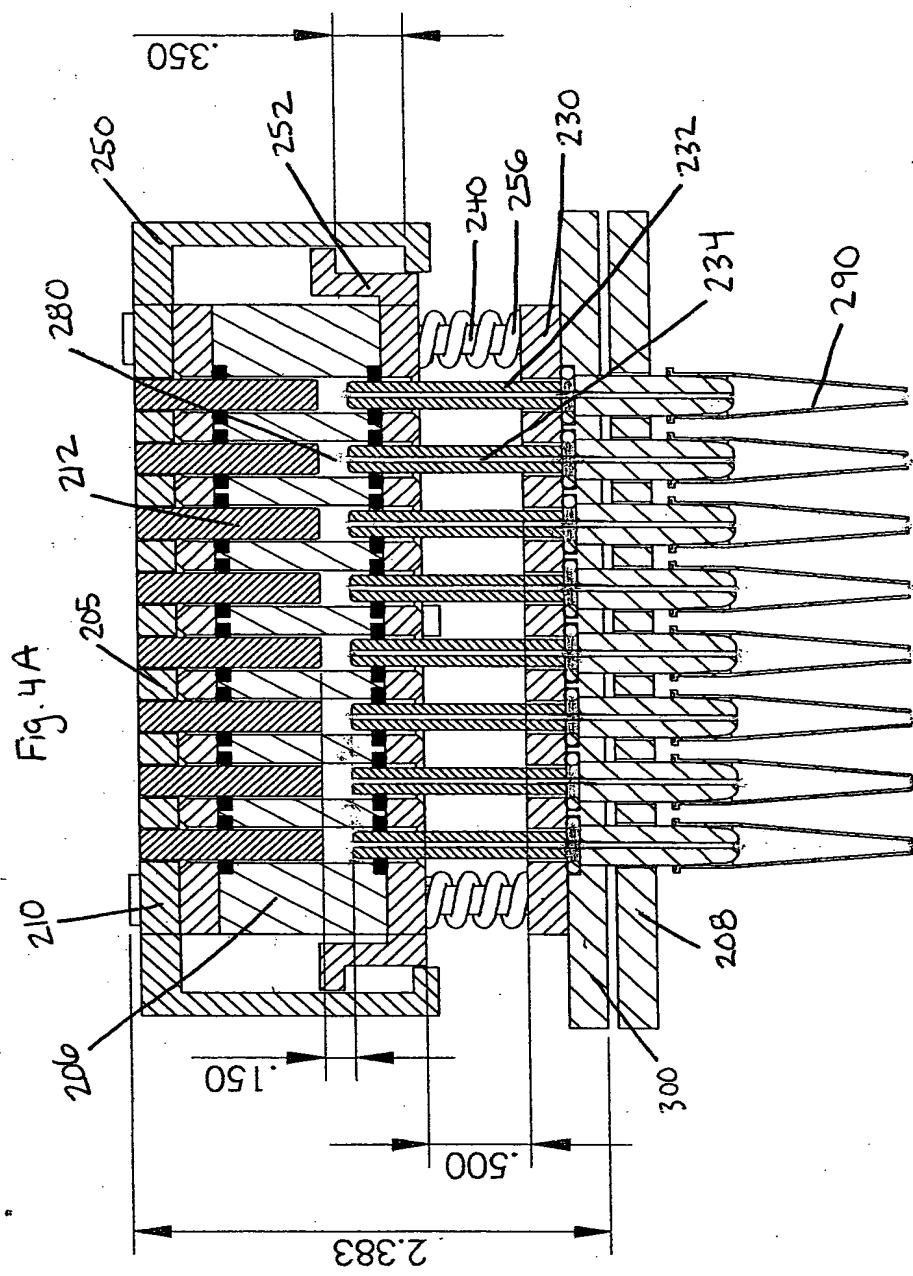
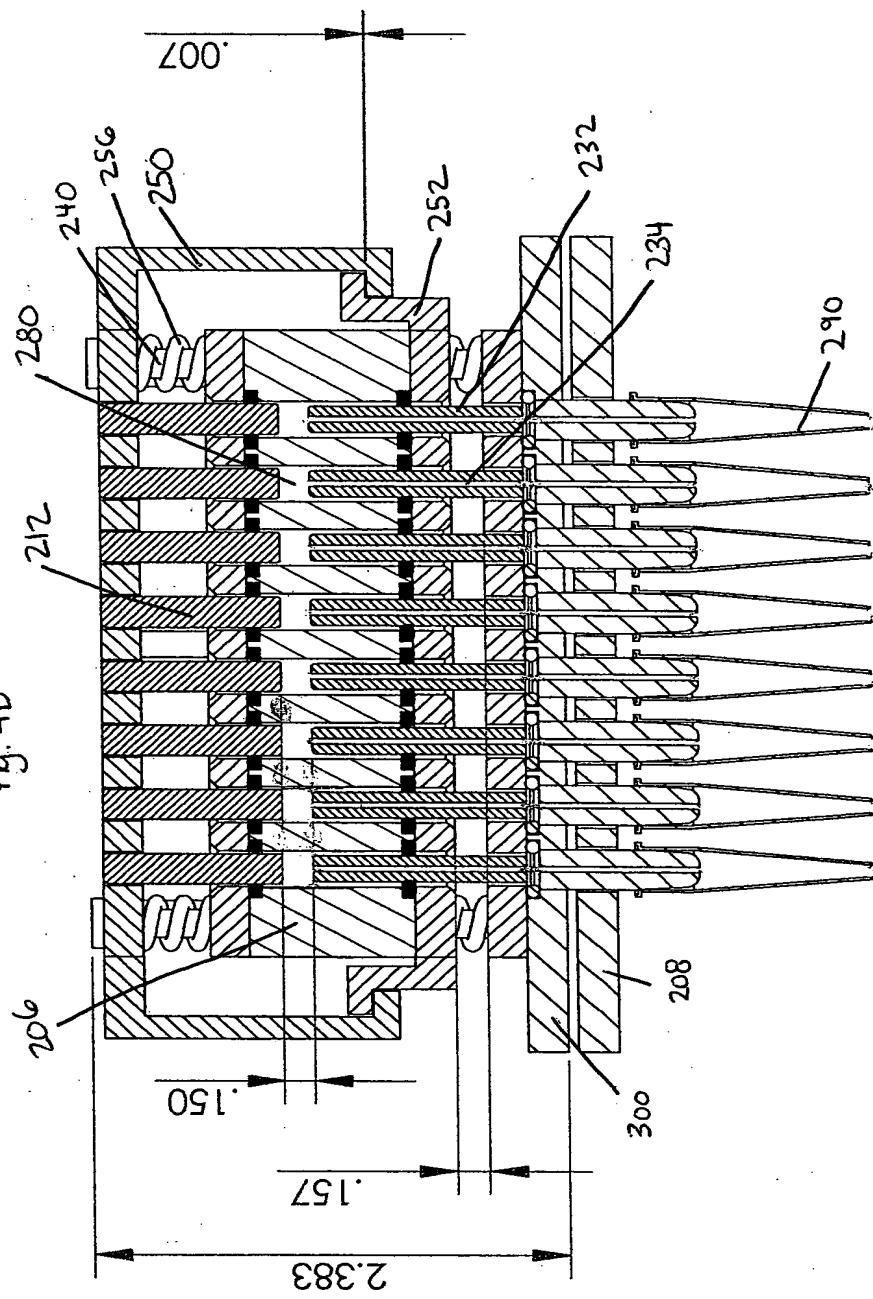


Fig. 4B



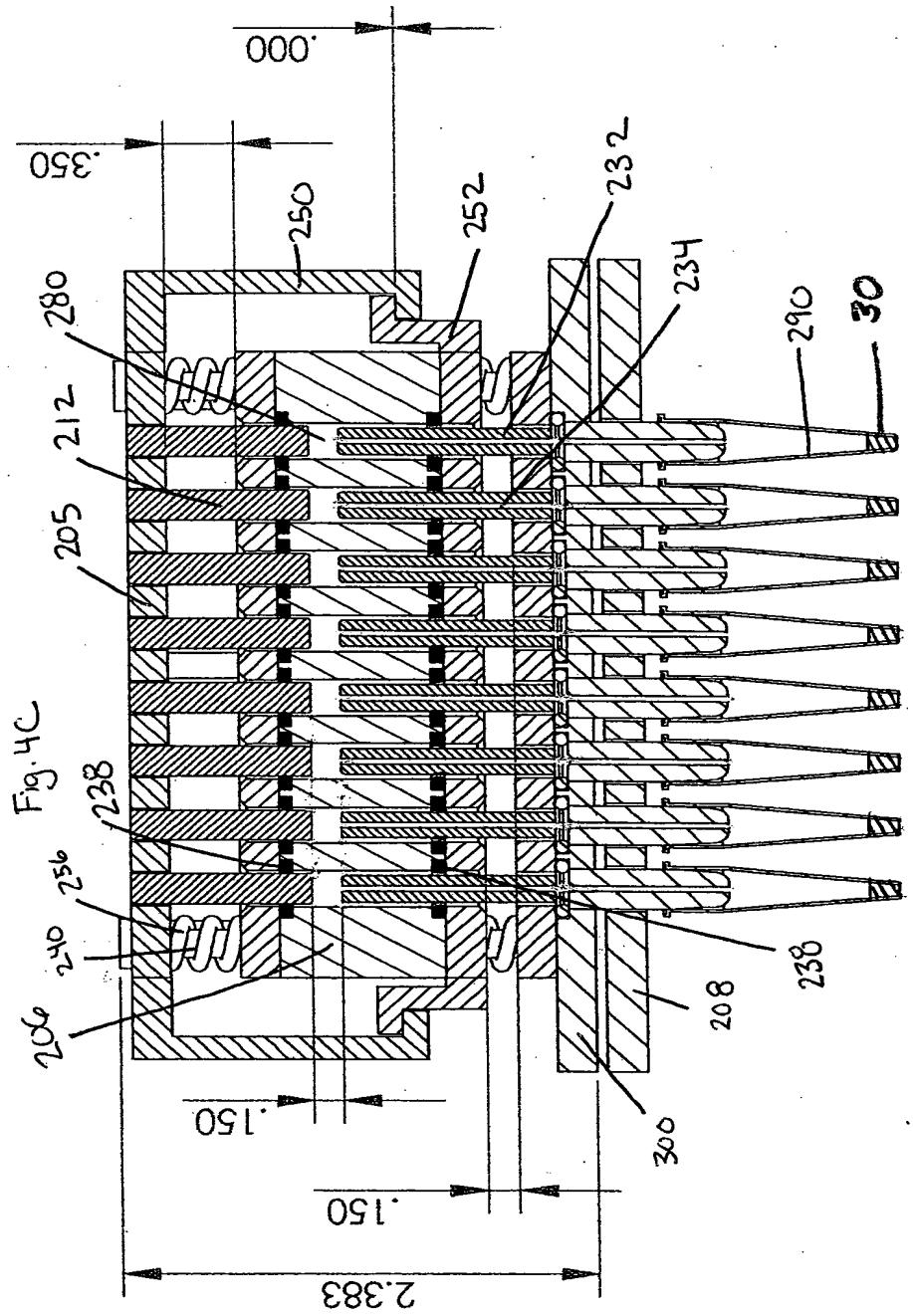


Fig. 4D

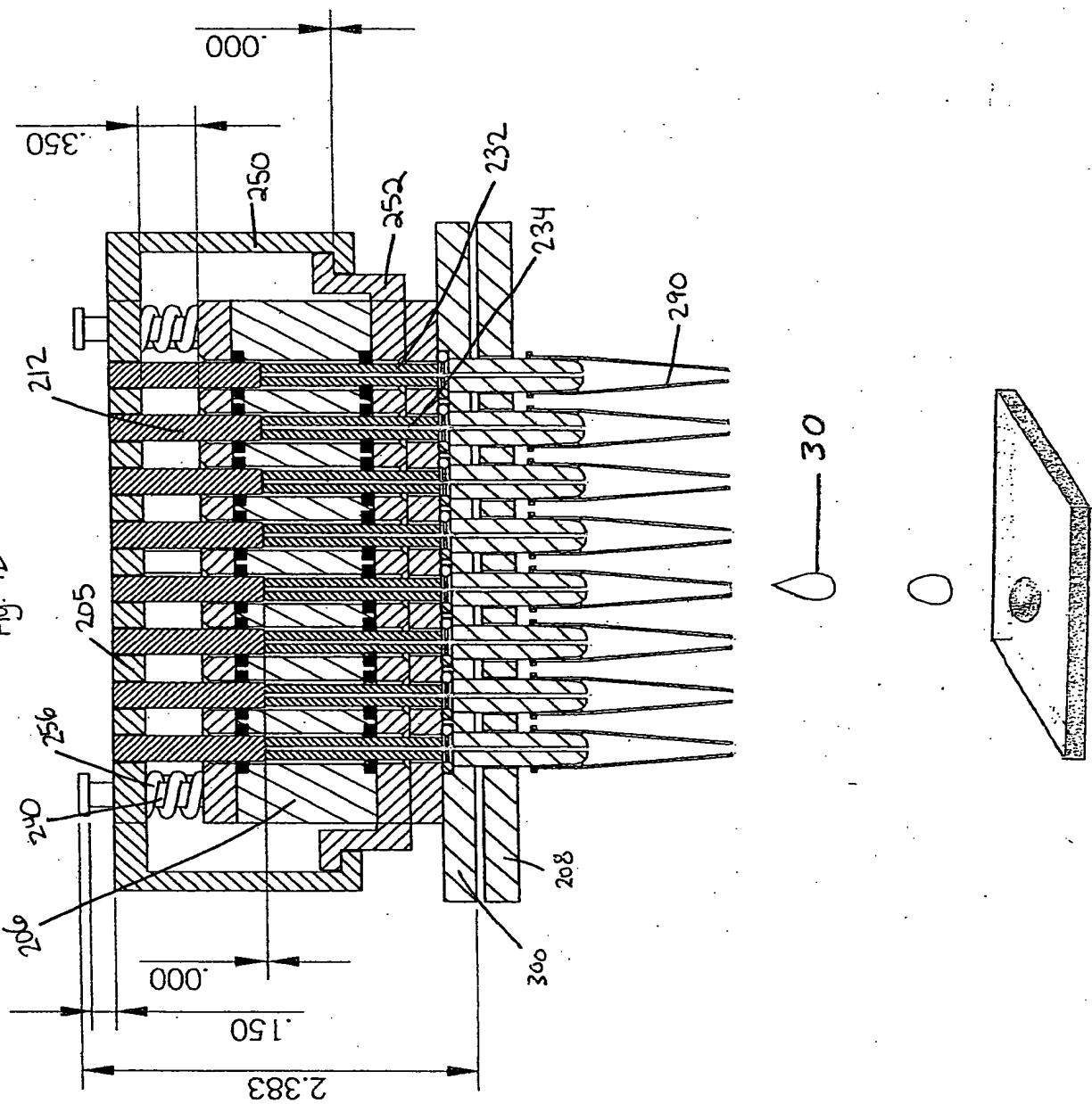
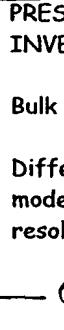


Figure 5.

Cross Section	Diameter (inches)	Cross Sectional Area (square inches)	Res (uL/inch)	Res (mm/uL)	Flow Max (uL/sec)	Maximum Tip Escape Velocity (meters/sec) for tip diameters (inches)				
						0.020	0.016	0.012	0.010	
	Hypothetical fine resolution conventional pipetter	0.033	0.0009	14	1.8	20	0.10	0.16	0.29	0.41
	Conventional pipetter	0.062	0.003	50	0.51	69	0.4	0.6	1.0	1.5
	Conventional pipetter	0.125	0.0123	202	0.13	282	1.4	2.3	4	6
	PRESENT INVENTION Bulk mode	0.184	0.026	454	0.062	635	3	5	9	13
	Differential mode (fine resolution)	0.033	0.0009	14	1.8	20	0.10	0.16	0.29	0.41

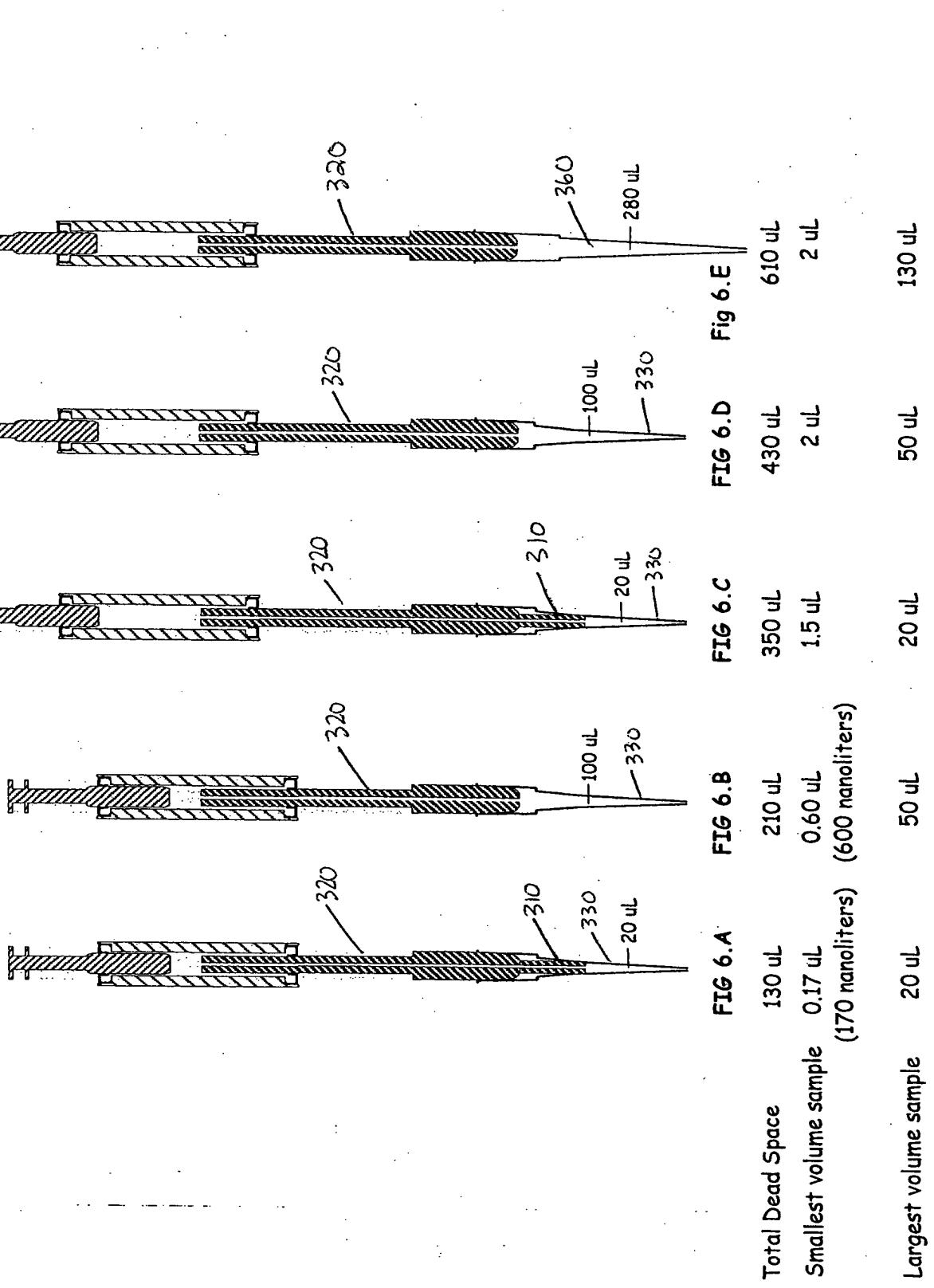
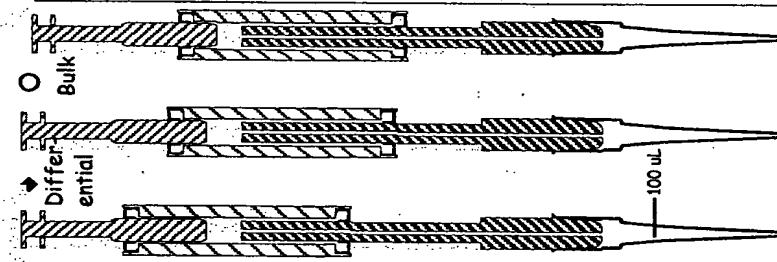
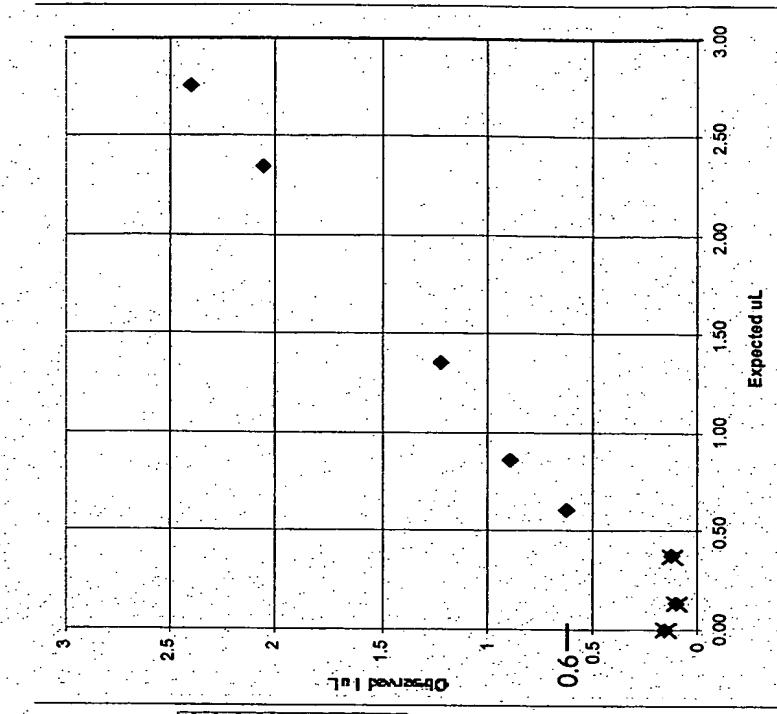
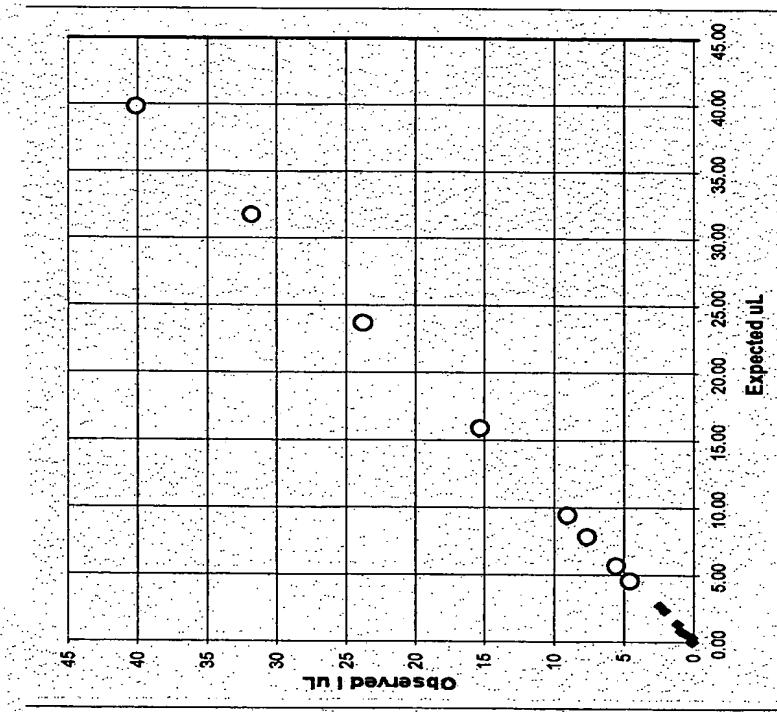


Fig. 7B



210 uL total
internal dead
space

Fig. 7A



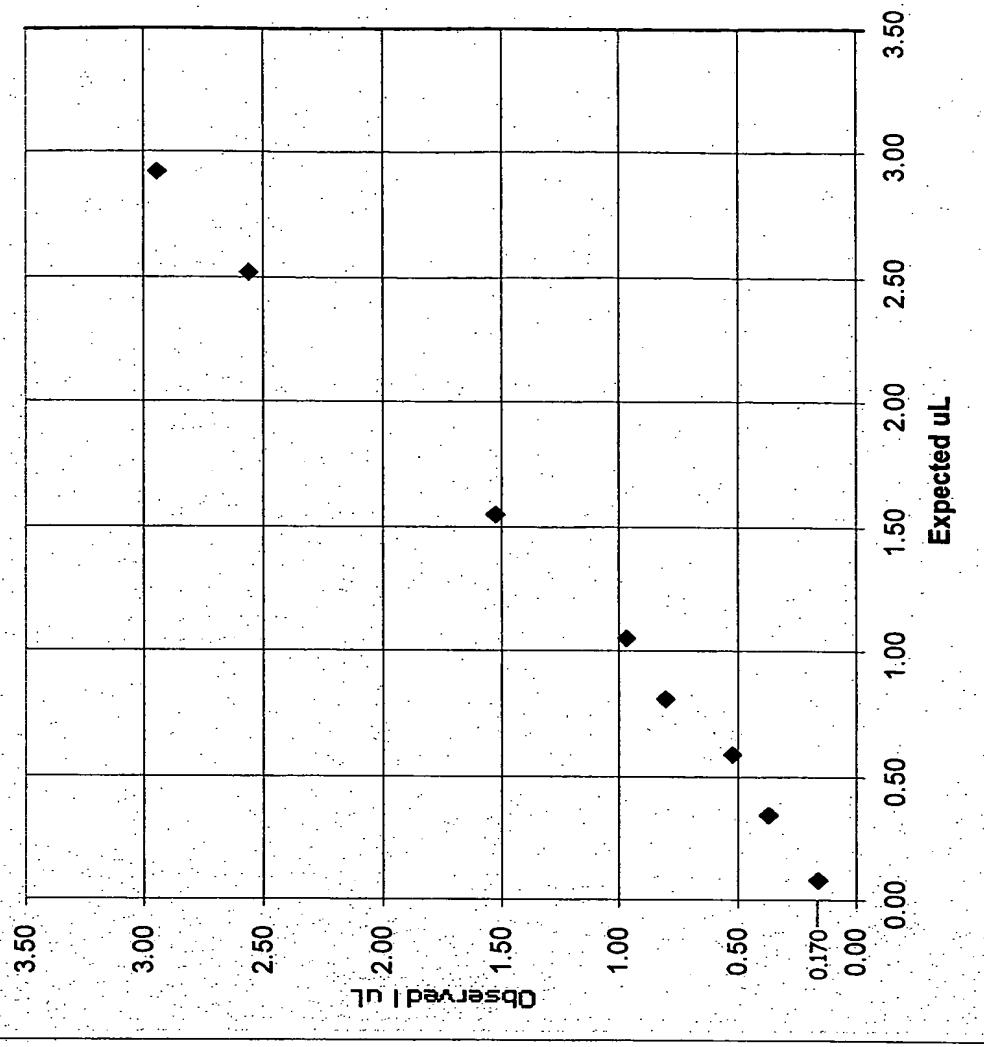


Fig. 8

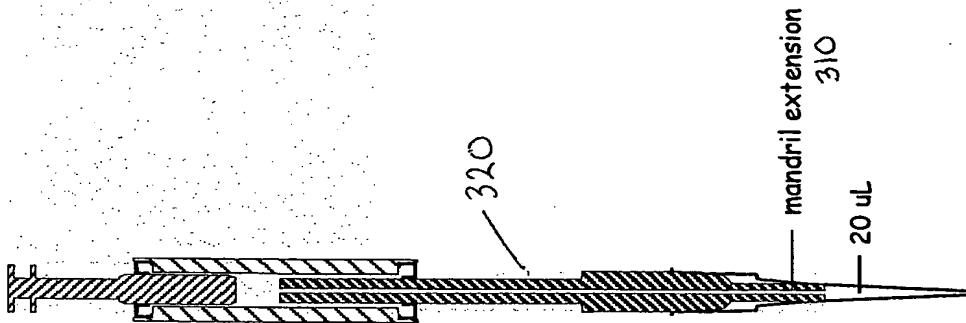
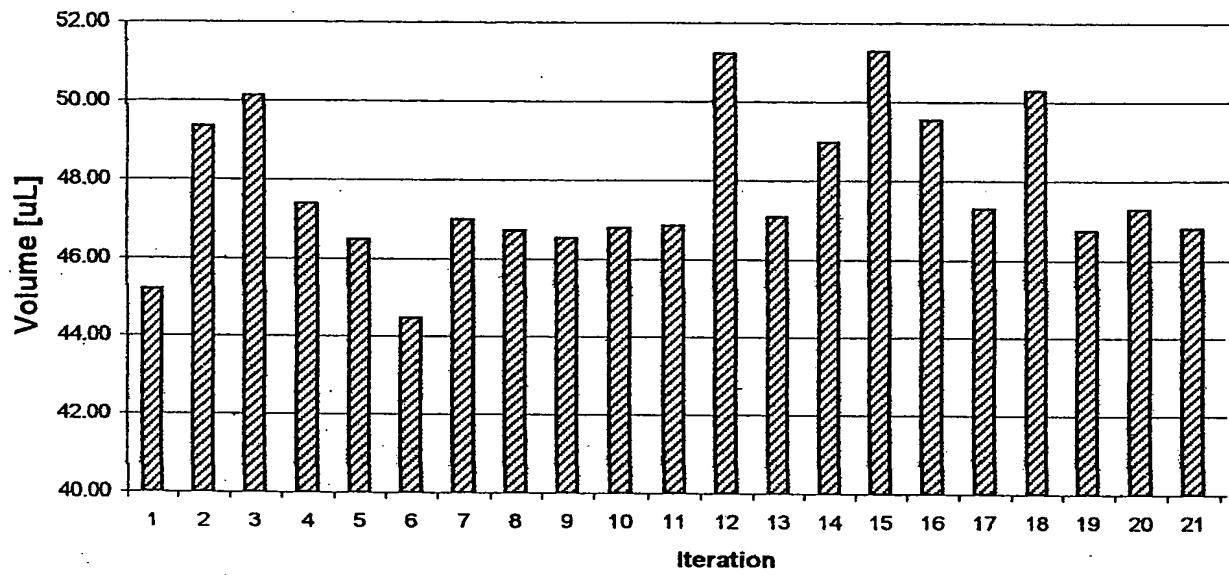


FIG. 9

Dispense Precision in DRD BULK MODE underwater
in Large 5 mL (5,000 uL) Internal Air Space Pipette
Standard Deviation 1.83 uL CV 3.8%



Dispense Precision in DRD DIFFERENTIAL MODE underwater
in Large 5 mL (5,000 uL) Internal Air Space Pipette
Standard Deviation 0.21 uL CV 0.4%

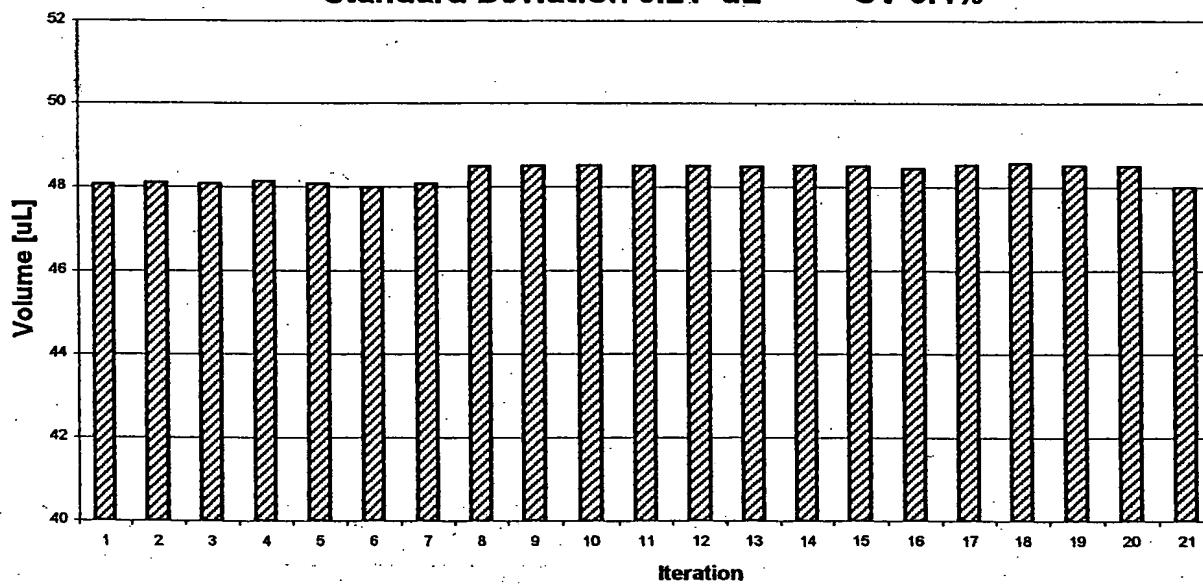


Fig.10

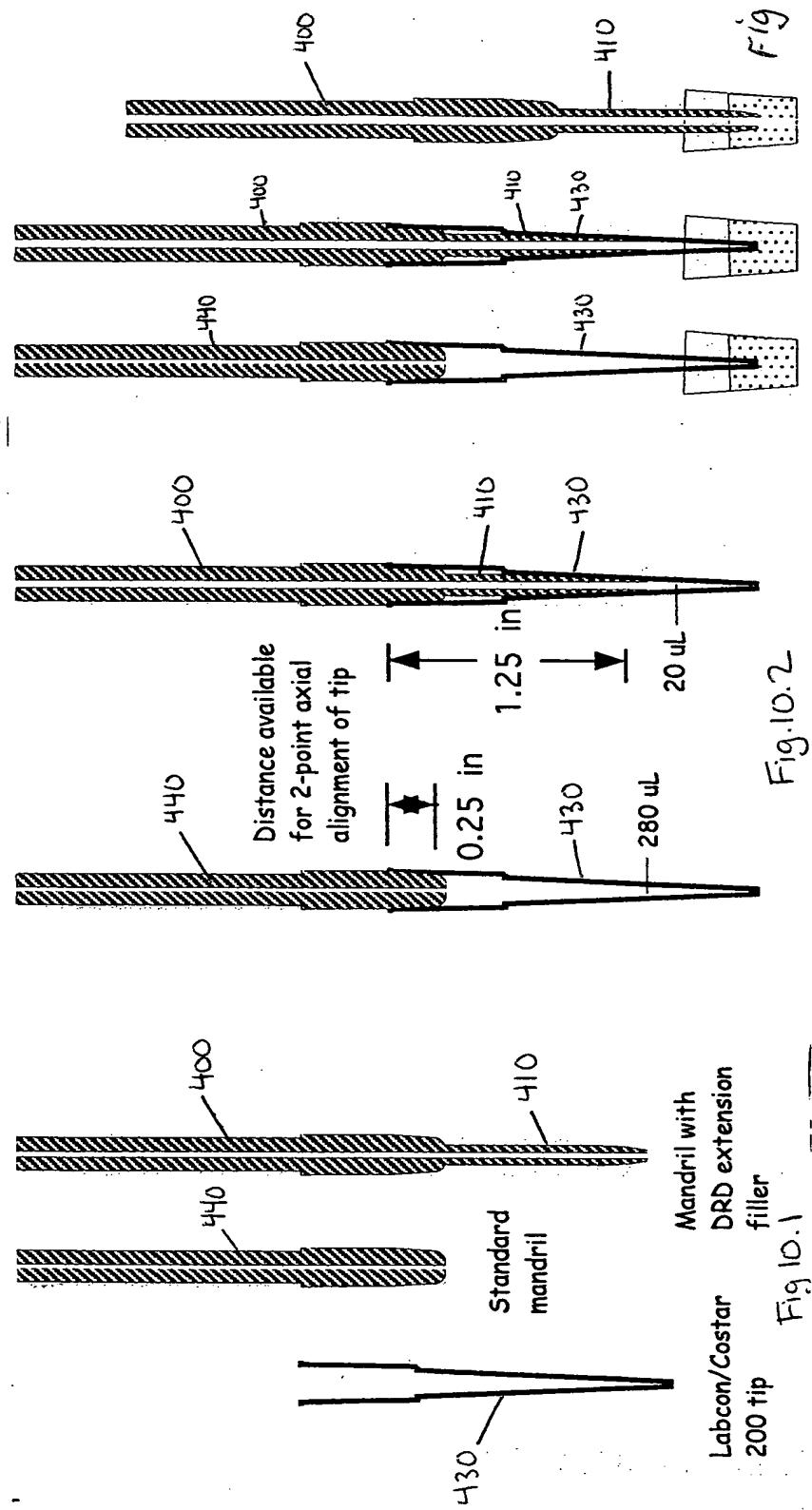


Fig.10.2

Fig.10.3

Fig. 11



Fig. 11.1



Fig. 11.2



Fig. 11.3



Fig. 11.4

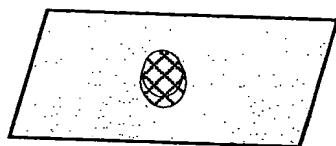


Fig. 12

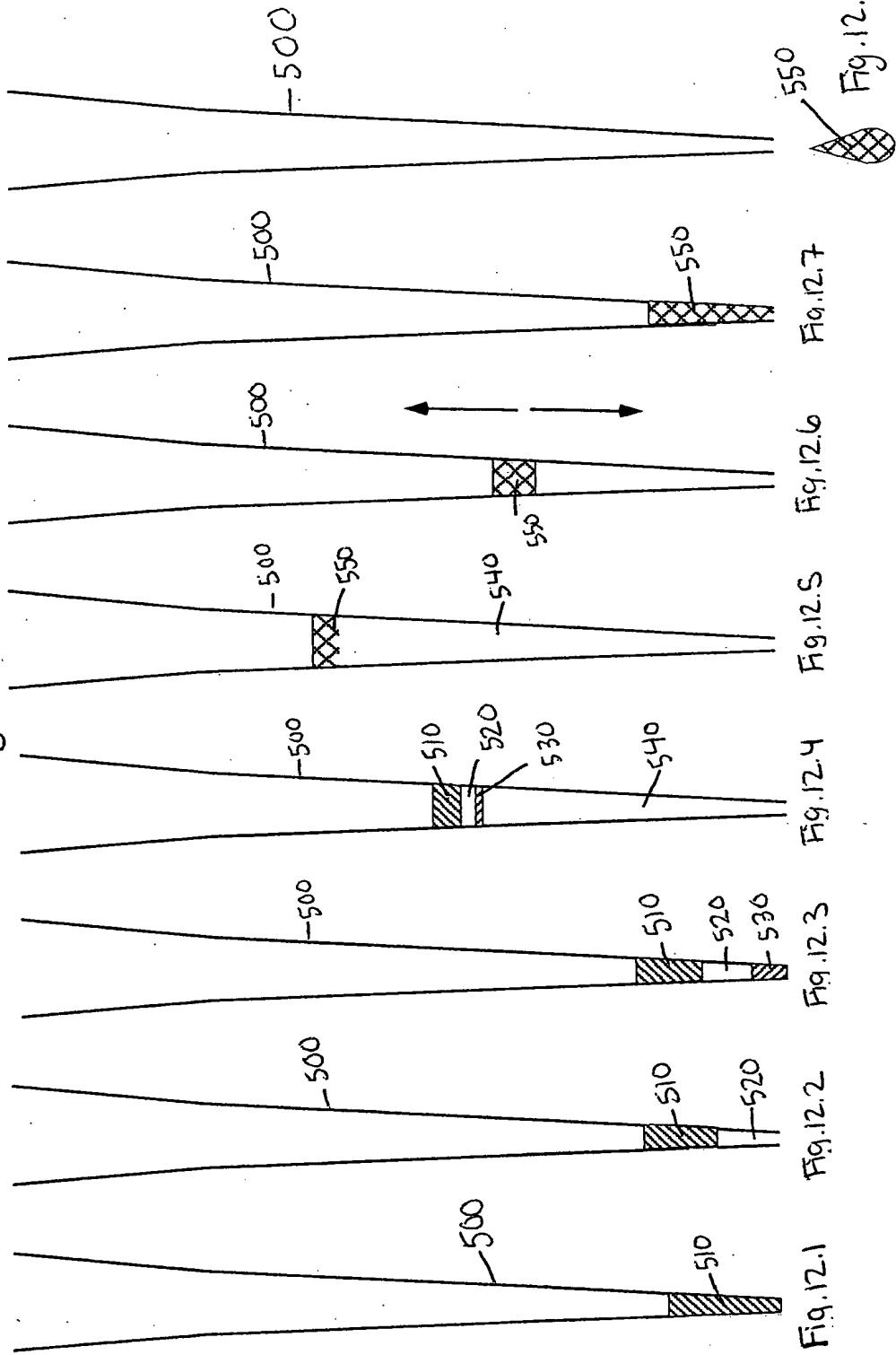


Fig. 13

